Contagion : Scientific Periodical of Public Health and Coastal Health 5(3)(2023)
ISSN : http://jurnal.uinsu.ac.id/index.php/contagion

Factors Associated with Hypertension Control Behavior in the Pre-Elderly Group in Padangsidimpuan City

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Track Record Article

Accepted: 23 May 2023
Revised: 15 July 2023
Published: 31 July 2023

How to cite :
Hasibuan, R. R., Rochadi, K., & Siregar, F. A. (2023). Factors Associated with Hypertension Control Behavior in the Pre-Elderly Group in Padangsidimpuan City. Contagion : *Scientific Periodical of Public Health and Coastal Health*, 5(3), 811–823.

Abstract

Indonesia is currently facing a double burden of disease, namely communicable diseases and non-communicable diseases, where behavior is one of the causes of changes in the pattern of these diseases. One of the non-communicable diseases which is the main cause of premature death in the world, namely hypertension is a silent killer with the highest prevalence rate in Indonesia. Untreated hypertension can cause complications. The elderly population is the most vulnerable population suffering from hypertension. One of the areas in North Sumatra with an ever-increasing number of cases of hypertension is Padangsidimpuan City. This study aims to analyze factors related to hypertension control behavior in the pre-elderly group in Padangsidimpuan City. This type of research is quantitative analytic with cross sectional design. The total population in this study was 3104 with a total sample of 237 obtained using cluster sampling and proportional random sampling. The instrument in this study used a questionnaire. The data obtained were analyzed by univariate, bivariate, and multivariate using multiple logistic regression tests. The results showed that there was a relationship between intention (p=0.002), knowledge (p=<0.001), attitude (p=<0.001), affordability of information (p=<0.001), availability of facilities and infrastructure (p=0.020), and support social status (p=0.002) with hypertension control behavior. Multivariate analysis shows that the attitude variable is the variable most related to the behavior of the elderly in controlling hypertension with a Prevalence Ratio (RP) value of 4.869. The pre-elderly group is expected to be more active in adopting a healthy lifestyle, and an active role from the family and health workers is needed in providing support to hypertension sufferers to implement hypertension control behavior and avoid complications.

Keywords:* *Behavior, Hypertension Control, Pre-Elderly

INTRODUCTION

Non-communicable diseases (NCDs) are the main cause of death worldwide and are also known as chronic diseases that tend to last a long time and are the result of a combination of genetic, physiological, environmental and behavioral factors (WHO, 2021). One of the non-communicable diseases which is the main cause of premature death in the world is high blood pressure or hypertension (Kementrian Kesehatan RI, 2019). WHO estimates that the prevalence of hypertension globally is 22 percent of the total population in the world, of which only one fifth is estimated to make efforts to control hypertension (Kementrian Kesehatan RI, 2019). Approximately 972 million (26.4%) of the world's population suffer from hypertension and it is estimated that by 2025 it will increase to 29.2 percent, of which 333 million are in developed countries and 639 million in developing countries, one of which is Indonesia (WHO, 2021).

The results of the 2018 Basic Health Research organized by the Ministry of Health showed an increase in the prevalence of hypertension in Indonesia by 260 million (34.1%)

compared to the results of the 2013 Basic Health Research Results of only 25.8%. The prevalence of hypertension also increases with increasing age group, because physiologically the higher a person's age, the greater the risk of developing hypertension (Kemenkes RI, 2018). Judging from the results of Basic Health Research in 2018, North Sumatra Province ranks fourth in cases of hypertension in Indonesia with a total of 29.19 percent, after West Java with 39.60 percent, East Java with 36.32 percent and Central Java with 37. 57 percent (Kemenkes RI, 2018). The number of cases of hypertension in North Sumatra has increased when compared to 2013, only 24.7 percent (Kementerian Kesehatan, 2018). Meanwhile, the percentage of hypertension receiving health services in North Sumatra Province in 2020 is only 39.6 percent (Dinas Kesehatan Provinsi Sumatera Utara, 2019).

The high prevalence of hypertension in the elderly is caused by the large number of elderly who adopt an unhealthy lifestyle. The problem of hypertension is not only in the large number of sufferers, but also in the large number of uncontrolled hypertension sufferers, even though they have taken antihypertensive treatment efforts (Riyadina, 2019). This was also explained by Rahayu in Podungge (2020) that in Indonesia, an estimated 15 million people with hypertension, but only four percent are controlled. Uncontrolled blood pressure has an impact on frequent visits to health facilities, decreased patient quality of life, and increased medical costs (Nina et al., 2021).

Elderly who have chronic diseases such as hypertension really need social support and help from other people, especially the family which is the main support system for the elderly in maintaining their health (Tutpai et al., 2021). Therefore, proper control of hypertension is needed to avoid more severe complications due to hypertension. This is in line with one of the Sustainable Development Goals (SDGs) goals, namely reducing by one third premature mortality due to non-communicable diseases by 2030, then one of the global targets in controlling non-communicable diseases, namely the prevalence of hypertension by 25 percent by 2025 (Kementrian Kesehatan RI, 2019).

Based on the description of the problem, the aim of the study was to determine the factors associated with hypertension control behavior in the pre-elderly group in Padangsidimpuan City.

METHODS

This type of research is a quantitative study with an analytic cross-sectional design. The research was conducted in Padangsidimpuan City. This research was conducted for six months starting from September 2022 to April 2023. The population of this study is all pre-elderly who

are undergoing hypertension treatment in 2021 as many as 1,035 people. In determining the sample the researcher also paid attention to the inclusion and exclusion criteria, while the inclusion criteria were willing to be research respondents, residing in Padangsidimpuan City, aged 45 to 59 years, living with family, and coming for treatment and being registered as a hypertension patient in Padangsidimpuan City. For the exclusion criteria, namely respondents who were sick at the time of data collection, elderly hypertensive patients who moved from the study location, and aged <45 years. Determining the sample size using the Kothari formula so that a total sample of 237 people was obtained. Sampling was carried out by means of clusters (cluster sampling) or referred to as regional sampling techniques.

The research instrument used in this study was an observation sheet questionnaire which was used as a material or tool to conduct direct interviews with respondents (elderly hypertension). This study consists of independent variables (independent) consisting of intentions, knowledge, attitudes, availability of facilities and infrastructure, affordability of information, and social support for the dependent variable (dependent) is hypertension control behavior. Analysis was performed using univariate analysis, bivariate analysis via chi-square test at 95% confidence level ($\alpha = 0.05$), multivariate analysis using multiple logistic regression tests with 95% confidence level ($\alpha = 5\%$).

RESULTS

Table 1 Distribution of Respondent Characteristics

Respondent Characteristics	n	%
Age		
45-49 years	52	21,9
50-54 years	61	47,7
55-59 years	124	52,3
Gender		
Man	80	33,8
Woman	157	66,2
Marital status		
Marry	200	84,4
Not married yet	3	1,3
Widow widower	34	14,3
Education		
Did not finish elementary school		
Elementary school	26	11,0
Junior high school	41	17,3
Senior High School	109	46,0
Academy	37	15,6
College	24	10,1
Work		
Doesn't work	66	27,8
Government employees	46	19,4
Self-employed	68	28,7

Laborer	6	2,5
farmer	51	21,5

Based on able 1 above, information can be obtained that the distribution of respondents with the highest age group is the 55-59 year age group, namely 124 respondents (52.3%). The distribution of respondents with the highest gender was female, with 157 respondents (66.2%). Respondents with the most marital status were married as many as 200 respondents (84.4%). Respondents with the highest level of education, namely the level of high school education, were 109 respondents (46%). Meanwhile, respondents with the most occupational groups, namely the self-employed, were 68 respondents (28.7%).

Table 2 Relationship between intention and behavior in controlling hypertension

Intention	Behavior				Total		p
	Good		Not enough				
	n	%	n	%	n	%	
Big	132	97.1	86	85.1	218	100.0	0.002
Small	4	31.6	15	14.9	19	100.0	
Total	**136**	**77.6**	**101**	**22.4**	**237**	**100.0**	

Based on table 2, the results of the study show that 237 respondents with good intentions had 132 respondents (97.1%) good behavior and 86 respondents (85.1%) had less behavior. The results of the study were also obtained from 19 respondents with small intentions who had good behavior as many as 4 respondents (31.6%) and less behavior as many as 15 respondents (14.9%) in controlling hypertension in the pre-elderly group in Padangsidimpuan City. The results of the chi-square statistical test obtained that the value of p = 0.002, so it can be seen that there is a significant relationship between knowledge and hypertension control behavior in the pre-elderly group in Padangsidimpuan City.

Table 3 Relationship between Knowledge and Hypertension Control

Knowledge	Behavior				Total		p
	Good		Not enough				
	n	%	n	%	n	%	
Good	103	74.1	36	25.9	139	100,0	<0,001
Not enough	33	33.7	65	66.3	98	100,0	
Total	**136**	**57.4**	**101**	**42.6**	**237**	**100,0**	

Based on table 3, the results of the study show that out of 139 respondents with good knowledge, 103 respondents (74.1%) had good behavior and 36 respondents (25.9%) had poor behavior. The results of the study were also obtained from 98 respondents with less knowledge who had good behavior as many as 33 respondents (33.7%) and less behaved as many as 65 respondents (66.3%) in controlling hypertension in the pre-elderly group in Padangsidimpuan City. The results of the chi-square statistical test obtained that the value of p = <0.001, meaning

that there is a significant relationship between knowledge and hypertension control behavior in the pre-elderly group in Padangsidimpuan City.

Table 4 Relationship between Attitude and Hypertension Control

Attitude	Behavior				Total		p
	Good		Not enough				
	n	%	n	%	n	%	
Positive	114	72.6	43	27.4	157	100,0	<0,001
Negative	22	27.5	58	72.8	80	100,0	
Total	**136**	**57.4**	**101**	**42.6**	**237**	**100,0**	

Based on table 4, the results of the study show that out of 157 respondents with a positive attitude, 114 respondents (72.6%) had good behavior and 43 respondents (27.4%) lacked behavior. The results of the study were also obtained from 67 respondents with a negative attitude, 22 (27.5%) had good behavior and 58 (72.8%) had poor behavior in controlling hypertension in the pre-elderly group in Padangsidimpuan City. The results of the chi-square statistical test obtained that the value of p = <0.001, meaning that there is a relationship between attitude and hypertension control behavior in the pre-elderly group in Padangsidimpuan City.

Table 5 Relationship between Information Affordability and Hypertension Control Behavior

Information Affordability	Behavior				Total		p
	Good		Not enough				
	n	%	n	%	n	%	
Affordable	86	73,5	31	26,5	117	100,0	<0,001
Less Affordable	50	41,7	70	58,3	120	100,0	
Total	**136**	**57,4**	**101**	**42,6**	**237**	**100,0**	

Based on table 5, the results of the study show that out of 117 respondents with affordable information, 86 respondents (73.5%) behaved well and 50 respondents (41.7%) behaved less. The results of the study were also obtained from 120 respondents with information that was not accessible, 50 respondents (41.7%) had good behavior and 70 respondents (58.3%) had poor behavior in controlling hypertension in the pre-elderly group in Padangsidimpuan City. The results of the chi-square statistical test obtained that the value of p = <0.001, meaning that there is a significant relationship between information affordability and hypertension control behavior in the pre-elderly group in Padangsidimpuan City.

Table 6 Relationship between Availability of Facilities and Infrastructure and Hypertension Control Behavior

Availability of Facilities and Infrastructure	Behavior				Total		p
	Good		Not enough				
	n	%	n	%	n	%	
Adequate	129	60.0	86	40.0	215	100.0	<0.001
Inadequate	7	31.8	15	68.2	22	100.0	
Total	**136**	**57.4**	**101**	**42.6**	**237**	**100.0**	

Based on table 6, the results of the study show that out of 215 respondents with adequate facilities and infrastructure, 129 respondents (60%) had good behavior and 86 respondents (40%) behaved less. The results of the study were also obtained from 22 respondents with inadequate facilities and infrastructure, 7 respondents (31.8%) had good behavior and 15 respondents (68.2%) had poor

behavior in controlling hypertension in the pre-elderly group in Padangsidimpuan City. The results of the chi-square statistical test obtained that the value of p = <0.001, meaning that there is a significant relationship between the availability of facilities and infrastructure and hypertension control behavior in the pre-elderly group in Padangsidimpuan City.

Table 7 Relationship of Social Support with Hypertension Control Behavior

Social Support	Behavior				Total		*p*
	Good		Not enough				
	n	%	n	%	n	%	
Good	91	66.4	46	33.6	137	100.0	0.002
Not enough	45	45.0	55	55.0	100	100.0	
Total	**136**	**57.4**	**101**	**42.6**	**237**	**100.0**	

Based on table 7, the results of the study show that out of 137 respondents with good social support, 91 respondents (66.4%) had good behavior and 46 respondents (33.6%) had less behavior. The results of the study were also obtained from 100 respondents with less social support who had good behavior as many as 45 respondents (45%) and less behaved as many as 55 respondents (55%) in controlling hypertension in the pre-elderly group in Padangsidimpuan City. The results of the chi-square statistical test obtained that the value of p = 0.002, meaning that there was a significant relationship between social support and hypertension control behavior in the pre-elderly group in Padangsidimpuan City.

Table 8. Multiple Logistic Regression Multivariate Analysis

Step	Variabel	Coefisien (B)	*p*	Exp (B)	95% CI for Exp (B)		
Step 1[a]	Intention	0,802	0,237	2,229	0,591	-	8,412
	Knowledge	0,690	0,056	1,994	0,982	-	4,049
	Attitude	1,561	<0,001	4,764	2,331	-	9,739
	Information Affordability	0,911	0,013	2,488	1,212	-	5,105
	Availability of Infrastructure	-0,283	0,640	0,753	0,230	-	2,467
	Social Support	0,057	0,873	1,059	0,525	-	2,138
	Constant	-0,409	<0,001	0,004			
Step 2[a]	Intention	0,813	0,229	2,254	0,600	-	8,468
	Knowledge	0,696	0,053	2,005	0,991	-	4,058
	Attitude	1,562	<0,001	4,766	2,333	-	9,738
	Information Affordability	0,928	0,008	2,530	1,270	-	5,039
	Availability of Infrastructure	-0,259	0,658	0,772	0,245	-	2,429
	Constant	-5,400	<0,001	0,005			
Step 3[a]	Intention	0,765	0,251	2,149	0,582	-	7,932
	Knowledge	0,701	0,052	2,016	0,995	-	4,084
	Attitude	1,522	<0,001	4,583	2,296	-	9,150
	Information Affordability	0,895	0,009	2,448	1,249	-	4,800
	Constant	-5,536	0,000	0,004			
Step 4[a]	Knowledge	0,709	0,049	2,031	1,004	-	4,112
	Attitude	1,583	<0,001	4,869	2,455	-	9,657
	Information Affordability	0,960	0,005	2,613	1,344	-	5,081
	Constant	-4,913	<0,001	0,007			

Based on table 8, it can be seen that the final results of the multiple logistic regression test of six variables, there are three variables that are most related to hypertension control in the pre-elderly group in Padangsidimpuan City, including: knowledge with a value of p = 0,049 and RP = 2,031; attitude with a value of p= <0,001 and a value of RP= 4,869; and the availability of information affordability with a value of p = 0,005 and a value of RP = 2,613.

Based on the results of multiple logistic regression analysis, one variable was found to be significantly related to hypertension control behavior in the pre-elderly group in Padangsidimpuan City, namely the attitude of the pre-elderly (p=<0.001) <0.005 and RP=4,869. This means that respondents who have a positive attitude towards controlling hypertension will have a 4,869 chance to behave well in controlling blood pressure compared to respondents who have a negative attitude.

DISCUSSION

Correlation of Intention with Hypertension Control Behavior in Pre-Elderly Group in Padangsidimpuan City

The results showed that 218 respondents (92.0%) had the intention and 19 respondents (8.0%) did not have the intention to carry out hypertension control behavior. The relationship between intention and hypertension control behavior is proven based on the results of bivariate analysis using the chi-square test, p = 0.002, which means that there is a relationship between intention and hypertension control behavior in the pre-elderly group in Padangsidimpuan City. The results of this study are relevant to the results of previous research conducted by Alberta, Tat et al., (2016). who concluded that there was a relationship between intention and behavior of implementing a low-salt diet in elderly people with hypertension in the working area of the Pucang Public Health Center, Surabaya City.

In general, if an individual has the intention to perform a behavior, then the individual tends to do that behavior. Fishbein and Ajzen in Sharma & Romas (2012) also explained that the stronger the intention to engage in a behavior, the more likely the behavior is to be carried out. This theory is in line with the results of the study, where as many as 178 respondents (81.7%) had great intentions and good behavior in controlling hypertension.

Correlation between Knowledge and Behavior of Hypertension Control in Pre-Elderly Groups in Padangsidimpuan City

Respondent’s knowledge of hypertension control is to find out how far respondents know ways to control blood pressure so that it remains under control. The respondent's

knowledge in controlling hypertension is built based on the ability to think in accordance with the reality that the respondent sees and finds in the environment around the respondent. This shows that knowledge is the result of human sensing or the result of knowing someone about an object through their senses (Notoatmodjo, 2014).

Based on the results of a study conducted on 237 respondents, it was shown that 139 respondents (58.6%) had good knowledge and 98 respondents (41.4%) had poor knowledge about hypertension control. The relationship between knowledge level and hypertension control behavior was also proven based on the results of bivariate analysis using the chi-square test, obtained a value (p=<0.001) where p <0.05, so it can be concluded that there is a relationship between knowledge and hypertension control behavior in the pre-diagnosis group. elderly in Padangsidimpuan City. The results of this study are in line with research conducted by Heriyandi et al. (2018) where there is a significant relationship between knowledge and dietary behavior in the elderly (p = <0.001). This research is also in line with Septianingsih (2018) where there is a significant relationship between the level of knowledge of hypertensive patients and efforts to control hypertension (p=<0.001). A good level of knowledge influences the efforts to control hypertension by respondents.

Based on the explanation above, the researchers assume that there is a relationship between knowledge and hypertension control behavior in the pre-elderly group in Padangsidimpuan City, because the knowledge of some of the pre-elderly has an impact on their behavior in controlling hypertension, in which this knowledge is obtained by adequate counseling and information regarding hypertension control from health workers as well as family.

Correlation between Attitudes and Hypertension Control Behavior in Pre-Elderly Groups in Padangsidimpuan City

The results of the research conducted on 237 respondents showed that the majority of respondents had a positive attitude, namely that 157 respondents (66.2%) and 80 respondents (33.8%) had a negative attitude towards hypertension control. The relationship between respondents' attitudes and hypertension control behavior was proven based on the results of bivariate analysis using the chi-square test, obtained a value (p = <0.001) where p <0.05, meaning that there is a relationship between attitudes and hypertension control behavior in the pre-elderly group in Padangsidimpuan City.

The results of this study are relevant to the results of previous research conducted by Salwa (2023) in Makamhaji Village, where there is a significant relationship between attitudes towards blood pressure control with a p value = <0.001. The results of this study were also

reinforced by research conducted by Septianingsih (2018) showing that the value of $p = <0.001$, which means that there is a significant relationship between attitudes and efforts to control hypertension. Another study conducted by Anggraeni & Nasution (2019) also stated that there was a relationship between attitude and blood pressure control in the elderly with a p value = 0.004.

Correlation between Information Affordability and Hypertension Control Behavior in Pre-Elderly Groups in Padangsidimpuan City

Information provided by health workers can influence patient behavior and have an impact on improving blood pressure conditions (Hasanah et al., 2022). The relationship between information affordability and hypertension control behavior is proven based on the results of bivariate analysis using the chi-square test, it was found that the value of $p = <0.001$, meaning that there is a significant relationship between information affordability and hypertension control behavior in the pre-elderly group in Padangsidimpuan City. The results of this study are in line with the results of previous research conducted by Fatmawati, Ruli et al., (2021) showed that there was a relationship between access to information and the behavior of hypertensive patients in controlling blood pressure with $p=<0.001$.

Correlation between Availability of Infrastructure and Hypertension Control Behavior in Pre-Elderly Groups in Padangsidimpuan City

Ake langingi et al., (2020) state that the availability of facilities and infrastructure in controlling hypertension can be in the form of utilizing hospitals, health centers and the implementation of their programs very much depending on the facilities and services provided or provided to the community. The elderly Posyandu program is currently the main program implemented at the Puskesmas to improve the health status of the elderly.

The relationship between the availability of facilities and infrastructure and hypertension control behavior is proven based on the results of bivariate analysis using the chi-square test, obtained $p = 0.020$ where $p <0.05$, meaning that there is a relationship between the availability of facilities and infrastructure and hypertension control behavior in the pre-elderly group in Padangsidimpuan City. The results of this study are in line with research by Makatindu et al., (2021) regarding the identification of supporting factors related to adherence to taking medication in patients with hypertension at the Tatelu Public Health Center, North Minahasa Regency, where there is a significant relationship between affordability of access to health services and adherence to taking medication in patients with hypertension with a value of $p = 0.012$.

The existence of each Community Health Center which is the research location (Sadabuan Health Center, Padangmatinggi, and Hutaimbaru) is located on the side of the road so that it can be reached by private vehicle or public transportation, making it easily accessible for sufferers of hypertension in an effort to control the disease they are suffering from, whether for examination, treatment as well as counselling. Even so, there were still respondents who stated that it was difficult to reach the puskesmas because the distance was quite far, but this situation was not a problem for them to continue to seek health services, this was due to the good support provided by the family.

The Relationship between Social Support and Hypertension Control Behavior in Pre-Elderly Groups in Padangsidimpuan City

According to Eka et al., (2017) family social support is very much needed by a sufferer, because someone who is sick certainly needs attention from the family. Based on the results of the chi-square statistical test, it was found that the value of p = 0.002, meaning that there is a significant relationship between social support and hypertension control behavior in the pre-elderly group in Padangsidimpuan City. The results of this study are almost similar to those of Khomsatun & Sari (2022) that social support has a significant relationship with self-management behavior in people with hypertension where food intake (p = 0.021) and weight management (p = 0.006). The results of this study are also relevant to research conducted by Puspita et al., (2017) who concluded that there was a relationship between the support of health workers and compliance in undergoing hypertension treatment with a p value = <0.001.

The results showed that a good form of family support, namely informational support, was shown by health workers by providing counseling about hypertension control, which was 96.2 percent, and emotional support from health workers, which was shown by reminding respondents about behaviors that could exacerbate blood pressure, namely by 94.5 percent.

The Most Dominant Factor Associated with Hypertension Control Behavior in the Pre-Elderly Group in Padangsidimpuan City

Based on the final results of the multiple logistic regression test, three factors were most closely related to hypertension control in the pre-elderly group in Padangsidimpuan City, namely: knowledge with a value of p = 0,049 and RP = 2,031; attitude with a value of p= <0,001 and a value of RP= 4,869; and the availability of information affordability with a value of p = 0,005 and a value of RP = 2,613.

However, only one variable was significantly related to hypertension control behavior in the pre-elderly group in Padangsidimpuan City, namely the attitude of the elderly with

(p=<0.001) <0.005 and RP=4,869. This means that the elderly with hypertension who have a positive attitude are 5 times more likely to have good behavior in controlling hypertension than the elderly who have a negative attitude towards controlling hypertension.

The results of this study are in line with the results of multiple logistic regression analysis in the research of Heriyandi et al., (2018) which shows that the attitude variable is the variable that has the most influence on hypertension dietary behavior. The strength of the relationship between the attitude variable and the hypertension diet behavior variable can be seen from the value of p = <0.001 <0.025. The results of this study were also reinforced by the research of Tarigan et al., (2018) concerning the effect of knowledge, attitudes and family support on the hypertension diet in Hulu Village, Pancur Batu District in 2016, the Exp value (B) was obtained for the attitude variable of 9.655 meaning that the respondent having a positive attitude has a 10 times chance of implementing a hypertension diet well compared to respondents who have a negative attitude.

Heriyandi et al., (2018) also explained that attitude is a factor that greatly influences individual health values and can determine the right way of controlling hypertension sufferers. Therefore, one of the most influential keys in creating appropriate hypertension control behavior is to improve public attitudes which can be formed through health education and outreach related to hypertension.

CONCLUSION

Based on the results of a study involving 237 samples of factors related to hypertension control behavior in the pre-elderly group in Padangsidimpuan City, it can be concluded that there is a relationship between knowledge, attitudes, affordability of information, availability of infrastructure and facilities, and social support with hypertension control behavior in pre-elderly group in Padangsidimpuan City. The most dominant factor related to hypertension control behavior in the pre-elderly group in Padangsidimpuan City is the attitude factor with a Prevalence Ratio (RP) value of 4.869, meaning that pre-elderly hypertension with a positive attitude is 5 times more likely to have good behavior in controlling hypertension in the pre-elderly group in Padangsidimpuan City.

The researcher's suggestion to the Padangsidimpuan City Health Office through the puskesmas is to further increase the involvement of families and health workers in the program for controlling and treating hypertension patients. To health workers to be more active in providing counseling and health education not only to patients but also to families and close people with hypertension so they can participate in reminding and providing motivation to

sufferers. It is hoped that the community, especially the pre-elderly group, will be more active in implementing healthy lifestyle behaviors and participating in activities that have been organized and are aimed at controlling hypertension.

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